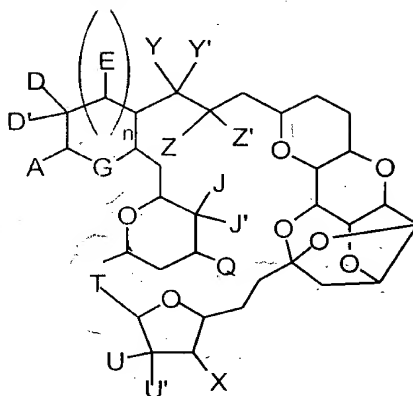


# CLAIMS

1. A compound having the formula:



wherein A is a C<sub>1-6</sub> saturated or C<sub>2-6</sub> unsaturated hydrocarbon skeleton, said skeleton being unsubstituted or having between 1 and 10 substituents, inclusive, independently selected from cyano, halo, azido, oxo, and Q<sub>1</sub>;

each Q<sub>1</sub> is independently selected from OR<sub>1</sub>, SR<sub>1</sub>, SO<sub>2</sub>R<sub>1</sub>, OSO<sub>2</sub>R<sub>1</sub>, NR<sub>2</sub>R<sub>1</sub>, NR<sub>2</sub>(CO)R<sub>1</sub>, NR<sub>2</sub>(CO)(CO)R<sub>1</sub>, NR<sub>4</sub>(CO)NR<sub>2</sub>R<sub>1</sub>, NR<sub>2</sub>(CO)OR<sub>1</sub>, (CO)OR<sub>1</sub>, O(CO)R<sub>1</sub>, (CO)NR<sub>2</sub>R<sub>1</sub>, and O(CO)NR<sub>2</sub>R<sub>1</sub>;

each of R<sub>1</sub>, R<sub>2</sub>, R<sub>4</sub>, R<sub>5</sub>, and R<sub>6</sub> is independently selected from H, C<sub>1-6</sub> alkyl, C<sub>1-6</sub> haloalkyl, C<sub>1-6</sub> hydroxyalkyl, C<sub>1-6</sub> aminoalkyl, C<sub>6-10</sub> aryl, C<sub>6-10</sub> haloaryl, C<sub>6-10</sub> hydroxyaryl, C<sub>1-3</sub> alkoxy-C<sub>6</sub> aryl, C<sub>6-10</sub> aryl-C<sub>1-6</sub> alkyl, C<sub>1-6</sub> alkyl-C<sub>6-10</sub> aryl, C<sub>6-10</sub> haloaryl-C<sub>1-6</sub> alkyl, C<sub>1-6</sub> alkyl-C<sub>6-10</sub> haloaryl, (C<sub>1-3</sub> alkoxy-C<sub>6</sub> aryl)-C<sub>1-3</sub> alkyl, C<sub>2-9</sub> heterocyclic radical, C<sub>2-9</sub> heterocyclic radical-C<sub>1-6</sub> alkyl, C<sub>2-9</sub> hydroxyheterocyclic radical, C<sub>2-9</sub> heterocyclic radical-C<sub>1-3</sub> alkylhydroxy, C<sub>2-9</sub> heteroaryl, and C<sub>2-9</sub> heteroaryl-C<sub>1-6</sub> alkyl;

each of D and D' is independently selected from R<sub>3</sub> and OR<sub>3</sub>, wherein R<sub>3</sub> is H, C<sub>1-3</sub> alkyl, or C<sub>1-3</sub> haloalkyl;

n is 0 or 1;

E is R<sub>5</sub> or OR<sub>5</sub>;

G is O, S, CH<sub>2</sub>, or NR<sub>6</sub>;

each of J and J' is independently H, C<sub>1-6</sub> alkoxy, or C<sub>1-6</sub> alkyl; or J and J' taken together are =CH<sub>2</sub> or -O-(straight or branched C<sub>1-5</sub> alkylene)-O-;

Q is C<sub>1-3</sub> alkyl;

T is ethylene or ethenylene, optionally substituted with (CO)OR<sub>7</sub>, where R<sub>7</sub> is H or C<sub>1-6</sub> alkyl;

each of U and U' is independently H, C<sub>1-6</sub> alkoxy, or C<sub>1-6</sub> alkyl; or U and U' taken together are =CH<sub>2</sub> or -O-(straight or branched C<sub>1-5</sub> alkylene)-O-;

X is H or C<sub>1-6</sub> alkoxy;

each of Y and Y' is independently H or C<sub>1-6</sub> alkoxy; or Y and Y' taken together are =O, =CH<sub>2</sub>, or -O-(straight or branched C<sub>1-5</sub> alkylene)-O-; and

each of Z and Z' is independently H or C<sub>1-6</sub> alkoxy; or Z and Z' taken together are =O,

=CH<sub>2</sub>, or -O-(straight or branched C<sub>1-5</sub> alkylene)-O-;  
or a pharmaceutically acceptable salt thereof.

2. The compound of claim 1, wherein n is 0.

3. The compound of claim 1, wherein each of D and D' is independently selected from R<sub>3</sub>, C<sub>1-3</sub> alkoxy, and C<sub>1-3</sub> haloalkyloxy.

4. The compound of claim 1, wherein R<sub>5</sub> is selected from H, C<sub>1-6</sub> alkyl, C<sub>1-6</sub> haloalkyl, C<sub>1-6</sub> hydroxyalkyl, C<sub>1-6</sub> aminoalkyl, C<sub>6-10</sub> aryl, C<sub>6-10</sub> haloaryl, C<sub>6-10</sub> hydroxyaryl, C<sub>1-3</sub> alkoxy-C<sub>6</sub> aryl, C<sub>6-10</sub> aryl-C<sub>1-6</sub> alkyl, C<sub>1-6</sub> alkyl-C<sub>6-10</sub> aryl, C<sub>6-10</sub> haloaryl-C<sub>1-6</sub> alkyl, C<sub>1-6</sub> alkyl-C<sub>6-10</sub> haloaryl, (C<sub>1-3</sub> alkoxy-C<sub>6</sub> aryl)-C<sub>1-3</sub> alkyl, C<sub>2,9</sub> heterocyclic radical, C<sub>2,9</sub> heterocyclic radical-C<sub>1-6</sub> alkyl, C<sub>2,9</sub> heteroaryl, and C<sub>2,9</sub> heteroaryl-C<sub>1-6</sub> alkyl.

5. The compound of claim 1, wherein A comprises a C<sub>1-6</sub> saturated or C<sub>2-6</sub> unsaturated hydrocarbon skeleton, said skeleton having at least one substituent selected from cyano, halo, azido, oxo, and Q<sub>1</sub>;

each Q<sub>1</sub> is independently selected from OR<sub>1</sub>, SR<sub>1</sub>, SO<sub>2</sub>R<sub>1</sub>, OSO<sub>2</sub>R<sub>1</sub>, NR<sub>2</sub>R<sub>1</sub>, NR<sub>2</sub>(CO)R<sub>1</sub>, and O(CO)NR<sub>2</sub>R<sub>1</sub>;

n is 0;

G is O;

J and J' taken together are =CH<sub>2</sub>;

Q is methyl;

T is ethylene;

U and U' taken together are =CH<sub>2</sub>;

X is H;

each of Y and Y' is H; and

Z and Z' taken together are =O or =CH<sub>2</sub>.

6. The compound of claim 1, wherein each Q<sub>1</sub> is independently selected from OR<sub>1</sub>, SR<sub>1</sub>, SO<sub>2</sub>R<sub>1</sub>, OSO<sub>2</sub>R<sub>1</sub>, NH(CO)R<sub>1</sub>, NH(CO)(CO)R<sub>1</sub>, and O(CO)NHR<sub>1</sub>;

each R<sub>1</sub> is independently selected from C<sub>1-6</sub> alkyl, C<sub>1-6</sub> haloalkyl, C<sub>6</sub> aryl, C<sub>6</sub> haloaryl, C<sub>1-3</sub> alkoxy-C<sub>6</sub> aryl, C<sub>6</sub> aryl-C<sub>1-3</sub> alkyl, C<sub>1-3</sub> alkyl-C<sub>6</sub> aryl, C<sub>6</sub> haloaryl-C<sub>1-3</sub> alkyl, C<sub>1-3</sub> alkyl-C<sub>6</sub> haloaryl, (C<sub>1-3</sub> alkoxy-C<sub>6</sub> aryl)-C<sub>1-3</sub> alkyl, C<sub>2,9</sub> heterocyclic radical, C<sub>2,9</sub> heteroaryl, and C<sub>2,9</sub> heteroaryl-C<sub>1-6</sub> alkyl;

one of D and D' is methyl or methoxy, and the other is H;

n is 0;

G is O;

J and J' taken together are =CH<sub>2</sub>;

Q is methyl;

T is ethylene;  
U and U' taken together are =CH<sub>2</sub> ;  
X is H;  
each of Y and Y' is H; and  
Z and Z' taken together are =O.

7. The compound of claim 6, wherein A has at least one substituent selected from hydroxyl, amino, azido, halo, and oxo.

8. The compound of claim 7, wherein A comprises a saturated hydrocarbon skeleton having at least one substituent selected from hydroxyl, amino and azido.

9. The compound of claim 8, wherein A has at least two substituents independently selected from hydroxyl, amino, and azido.

10. The compound of claim 8, wherein A has at least two substituents independently selected from hydroxyl and amino.

11. The compound of claim 8, wherein A has at least one hydroxyl substituent and at least one amino substituent.

12. The compound of claim 8, wherein A has at least two hydroxyl substituents.

13. The compound of claim 8, wherein A comprises a C<sub>2-4</sub> hydrocarbon skeleton.

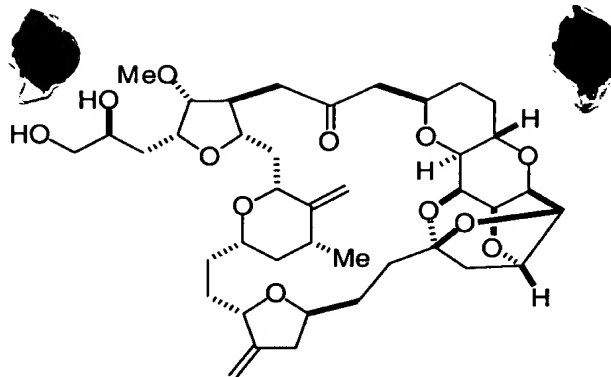
14. The compound of claim 8, wherein A comprises a C<sub>3</sub> hydrocarbon skeleton.

15. The compound of claim 13, wherein A has an (S)-hydroxyl on the carbon atom alpha to the carbon atom linking A to the ring containing G.

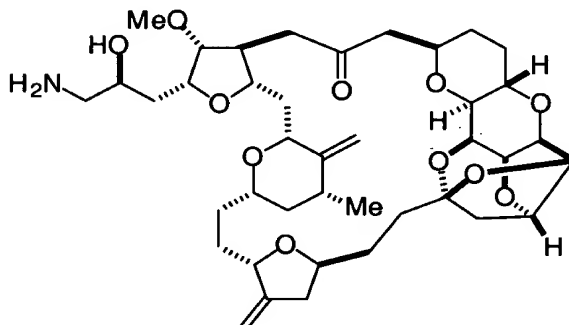
16. The compound of claim 6, wherein A comprises a C<sub>1-6</sub> saturated hydrocarbon skeleton having at least one substituent selected from hydroxyl and cyano.

17. The compound of claim 6, wherein Q<sub>1</sub> is independently selected from OR<sub>1</sub>, SR<sub>1</sub>, SO<sub>2</sub>R<sub>1</sub>, and OSO<sub>2</sub>R<sub>1</sub> where each R<sub>1</sub> is independently selected from C<sub>1-6</sub> alkyl, C<sub>1-6</sub> haloalkyl, C<sub>6</sub> aryl, C<sub>6</sub> haloaryl, C<sub>1-3</sub> alkoxy-C<sub>6</sub> aryl, C<sub>6</sub> aryl-C<sub>1-3</sub> alkyl, C<sub>1-3</sub> alkyl-C<sub>6</sub> aryl, C<sub>6</sub> haloaryl-C<sub>1-3</sub> alkyl, C<sub>1-3</sub> alkyl-C<sub>6</sub> haloaryl, and (C<sub>1-3</sub> alkoxy-C<sub>6</sub> aryl)-C<sub>1-3</sub> alkyl.

18. The compound of the following structure



19. The compound of the following structure



and pharmaceutically acceptable salts thereof.

20. A method for identifying an agent that induces a sustained mitotic block in a cell after transient exposure of said cell to said agent, said method comprising the steps of:

(a) incubating a first cell sample with a predetermined concentration of a test compound for a time interval between that sufficient to empty the  $G_1$  population and that equivalent to one cell cycle;

(b) substantially separating said test compound from said first cell sample;

(c) incubating said first sample in media free of said test compound for a time interval sufficient to allow at least 80% of the cells released from the mitotic block induced by a highly reversible mitotic inhibitor to complete mitosis and return to the  $G_1$  phase; and

(d) measuring the percentage of transiently-exposed cells from step (c) that have completed mitosis and returned to the  $G_1$  phase.

21. The method of claim 20, further comprising the steps of:

(e) incubating a second sample of cells with a concentration of said test compound less than or equal to that used in step (a) for a time interval between that sufficient to empty the G<sub>1</sub> population and that equivalent to one cell cycle;

5 (f) measuring the percentage of cells from step (e) that have completed mitosis and have returned to the G<sub>1</sub> phase; and

(g) determining the relative reversibility of said test compound by relating the measurement of step (d) and the measurement of step (f).

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